

In the Abstract:

Please amend the abstract as follows:

The invention concerns a method of making a thin film and/or particle particle (10, 10a) having a grey scale code embedded in its physical structure by refractive index changes between different regions of the thin film or particle, as well as thin films and particles made by the method. In a preferred method for encoding a thin film, a semiconductor or insulator substrate is etched to form a thin film including pores. The etching conditions are controlled to vary porosity in the thin film according to a pattern that will generate an optical signature in the reflectivity spectrum in response to illumination such that the optical signature will including a grey scale code. The etching waveform is formed by the addition of at least two separate sine components in accordance with the following equations (1) $A_n = (A_{n\max} - A_{n\min})/2$; (2) $k_n = \text{frequency} = 1/\text{period}$; (3) $y_n = A_n [\sin(k_n t - \Phi) + 1] + A_{n\min}$ (4) $y_{\text{comp}} = [y_1 + \dots + y_n]/n$ wherein equation (1) defines the amplitude of sine component n, which results in the spectral peak height, or grey scale of a bit; Equation (2) defines the frequency of the each sine component, which results in the spectral position of a peak, or identification of a bit (1st bit, 2nd bit, etc....); Equation (3) defines sine component n and Equation (4) defines the composite waveform used to drive the electrochemical etch . The film can be removed and diced into particles.